

APOLLO 8 MISSION COMMENTARY,12/23/68,GET 624400,CST 9:35p,190/1

PAO This is Apollo Control. At the present time, the spacecraft is traveling at a speed of 4176 miles - rather, feet per second, and the altitude is 16 814 nautical miles. You heard the crew advise they do hope to get some rest now before activity breaks up leading toward the Lunar orbit insertion maneuver. According to the flight plan, they'll have about 3 hours of relative quiet in which they will be able to get some rest prior to picking up activities leading toward that maneuver. Such things as preparing the guidance and navigation system, checking out the spacecraft systems, and getting set up for that maneuver. We'll continue to monitor for any conversation. We do anticipate that it will be relative quiet, and we'll come back up in the event that we hear anything from the crew, and we'll give you periodic status reports. At 62 hours 46 minutes, this is Apollo Control.

END OF TAPE.

PAO This is Apollo Control at 63 hours 4 minutes. At the present time our spacecraft is at an altitude above the Moon of 100, rather 15 035 nautical miles, and our velocity continuing to increase still increasing rather slowly but steadily. Our speed is now 4 194 feet per second. We would expect this relatively slow velocity build up to continue to about 65 hours. At that point the spacecraft will be some 11 000 nautical miles from the Moon, and from that point on the acceleration will begin to build up quite rapidly so that within about 4 hours from 65 hours at the point where we do the lunar orbit insertion maneuver from that - in that 4 hour period of time the velocity would just about double going from some 4350 feet per second up to about 8400 feet per second. We have some further information on the lunar orbit insertion maneuver as a result of the midcourse correction that was done at 61 hours, and we have the refinement also on the effects of that midcourse correction. Prior to the midcourse maneuver we compared that our perigee point or point of closest approach to the Moon would have been about 66.5 nautical miles. As a result of the burn it was lowered to about 61.8 nautical miles. The lunar orbit insertion maneuver using the service propulsion system engine is scheduled to occur at 69 hours 8 minutes ground elapse time. The burn duration would be 4 minutes and 2 seconds. This would give us an orbit about the Moon with a low point of about 60 nautical miles and a high point of about 170 nautical miles. We've had one brief conversation with the spacecraft since our previous report, and we advised the crew that they should be getting a good view of the Moon as they continue through their passive thermal control mode with the spacecraft rolling at the rate of about 1 revolution per hour. At a certain specified degree of roll they should acquire the Moon through one of the windows of the spacecraft. During this period of time the spacecraft will be coming into a much better view of the Moon with a larger part of the lighted surface becoming visible to the crew. We'll play back that short conversation for you and then pick up with the conversation that is developing right now between Cap Com Ken Mattingly and the crew.

CAPCOM Apollo 8, Houston.

SC Go ahead.

CAPCOM Finally found out where the Moon is. In your present FFC attitude if you happen to look out the right window as you go by, roll attitude of 320, it should be there.

SC Thank you. Houston, Apollo 8.

CAPCOM Go ahead.

SC Roger, Bill would like to ask the doctor for permission to take a Second.

APOLLO 8 MISSION COMMENTARY, 12/23/68, GET 630400, CST 9:55 191/2

CAPCOM Okay, stand by.
SC Houston, this is Apollo 8, did you call
me, I lost track for a minute.
CAPCOM Okay, Apollo 8, you're cleared to go ahead
with that pill. Take, recommends a small one.
SC Small one, Roger.
CAPCOM Apollo 8, Houston, if you can we'd like
to have you stir up the oxygen cyro.
SC Okay, I'll do that right now. Just a
moment, just the oxygen?
CAPCOM Okay, we want to get both the oxygen and
hydrogen.
SC Just the oxygen, then?
CAPCOM No, sir, both the oxygen and the hydrogen.
SC Okay, start - starting with the hydrogen.
CAPCOM Okay.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/23/68, GET 634300, CST 10:34p, 192/1

PAO This is Apollo Control at 63 hours 43 minutes. At the present time Apollo 8 is traveling at a speed of 4236 feet per second, and their altitude is 14 399 nautical miles above the moon. Since our last report, we had one brief conversation with Frank Borman aboard the spacecraft. It's been relatively quiet on the spacecraft as we would anticipate. The crew indicated that they would attempt to get some rest between the mid-course correction, which was performed at about 61 hours and the starting of activities leading up to the Lunar orbit insertion maneuver at 69 hours and 08 minutes ground elapsed time. There will be a period of a couple of hours before their activity picks up in preparation for that burn. Beginning at about 66 hours in the flight plan they will begin burn preparations of the systems checks and guidance and navigation preparation that they will do for that maneuver, and until the flight plan is relatively quiet, so we, in line with that, do expect that we'll be hearing very little from the crew. In a previous conversation we heard Bill Anders request permission to take a second tablet, one of the short acting sleeping pills that the crew carries onboard, and the flight surgeon recommended that he take a smaller tablet. They carried two different sizes. One a 50 miligram tablet and the other 100 miligram tablet, and the recommendation was that Anders take the 50 milligram tablet. We'll play back that conversation with the spacecraft. A very brief conversation, and then stand by for any further communication from the crew.

SC Okay, Houston, Apollo 8. We've cycled through all of the cryo fans.

CAPCOM Okay, thank you.

PAO It appears that we'll have no further communication with the crew at least for the moment. Here in Mission Control at the present time, activity is beginning to pick up as we near our change of shift. Flight Director, Glynn Lunney and his team of flight controllers are coming on at this time receiving briefings from the previous shift headed by Flight Director, Milton Windler. The activity on the boiler control, sounded as, you would expect, like a beehive at the present time. At 63 hours 48 minutes, this is Apollo Control, Houston.

END OF TAPE.

APOLLO 8 MISSION COMMENTARY, 12/23/68, GET 642224, CST 11:14 193/1

PAO This is Apollo Control, Houston, at 64 hours 22 minutes 24 seconds now into the flight of Apollo 8. The Apollo 8 spacecraft at the present time 12 761.5 nautical miles away from the Moon. Its current velocity relative to the Moon 4288.9 feet per second. Glenn Lunney's team of black - black team of flight controllers is now aboard. He brought the team up with amber lights, and went around the room and discussed our current status. Meanwhile we have about 15 seconds of conversation with the crew. The conversation relative to present trajectory and tracking. We'll play that now.

CAPCOM Loud and clear Apollo 8.

SC Okay, thank you.

CAPCOM Roger, we had a momentary loss there.

SC How is the tracking?

CAPCOM Looking great.

SC How is the tracking data look, Ken.

CAPCOM Looking great.

SC Roger.

PAO So at 64 hours 22 minutes 37 seconds you heard the discussion. Our tracking looks great. This is Apollo Control, Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 654800, CST 12:39a 194/1

PAO This is Apollo Control Houston at 65 hours 48 minutes now into the flight of the Apollo 8. At the present time our displays show us that we are 9128.8 nautical miles away from the moon. Our velocity reads 4460.3 feet per second. We have only had brief conversations with Apollo 8 since our last announcement. Primarily communication checks and we will play that tape for you now.

SC Houston. Apollo 8. Lunar radio check.

CAP COM Apollo 8. Houston. Loud and clear.

SC Good evening, Jerry.

CAP COM Howdy. The Black Watch is watching.

SC How do you read on this - how do you read on this antenna?

CAP COM Loud and clear on that one, Bill.

SC That's great. Roger.

CAP COM Don't mention it.

SC Houston. Apollo 8. Do you read on omni three?

CAP COM Apollo 8. Houston. Reading you loud with some background noise.

SC Roger. You are loud and clear.

CAP COM Apollo 8. Houston. Comm check.

SC Roger Houston. This is Apollo 8. Loud and clear. How me?

CAP COM Roger. Loud and clear, Jim.

PAO Apollo Control Houston. Meanwhile we have been provided some reassigned numbers for the loss of signal and acquisition of signal as we proceed on our lunar orbit insertion burn number one. We should lose Apollo 8 communications behind the moon at 68 hours 58 minutes 4 seconds ground elapsed time. We are now looking at the time of ignition of 69 hours 8 minutes 5 seconds and we should reacquire at 69 hours 31 minutes 34 seconds. Honeysuckle should be our tracking station to acquire. At 65 hours 15 minutes 18 seconds into the flight, this is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 661420, CST 1:05a 195/1

PAO This is Apollo Control, Houston, at 66 hours, 14 minutes, 20 seconds now into the flight of Apollo 8. Our current distance away from the moon is 7980.3 nautical miles. Our current velocity continuing to build up 4542.1 feet per second. We've passed along a preliminary LOI maneuver pad to the spacecraft. Jerry Carr conversing with Jim Lovell the command module pilot. And we'll relay that to you now.

CAPCOM Apollo 8, Houston with a preliminary LOI one pad, over. Apollo 8, Houston, over.
SC ...clear, Houston.

CAPCOM Apollo 8, Houston, this is a preliminary LOI one pad, over.

SC Roger, standby one.
CAPCOM Roger, standing by.
SC Houston, Apollo 8. Ready to copy.
CAPCOM Apollo 8, this is Houston. Roger. LOI 1 STS G & N, 62844 minus 161, plus 12 niner zero 6 niner zero 8 1841. Copy.

SC 8 is copying.
CAPCOM Roger, 8. Minus 2 niner 837 plus zero 23 niner zero plus zero zero niner niner 4 zero zero zero 2 zero zero zero zero 5 zero 16 niner 3 plus zero zero 6 zero zero 2 niner niner 4 niner 4 zero 2 2 niner 782. Copy.

SC Copy.
CAPCOM Roger, 8. Zero 1 zero 68 niner 26 zero. Perpieye zeta. Down zero 48 left zero 5. The remainder is not applicable. Sirius Rigel set of stars for GDC alliance. 12 niner 155 zero 1 zero negative ullage. We'll pass the horizon data later. Over.

SC Roger. Preliminary LOI one pad as follows: STS G & N, 62844 minus 161, plus 12 niner. Are you copying?

CAPCOM Roger, copying.
SC Zero 69 zero 81841 minus 29837 plus zero 239 zero plus zero zero 994 zero zero zero. 2 zero zero zero zero 5 zero 1693 plus zero zero 6 zero zero 29949 4 zero 2 29782 zero 1 zero 689 26 zero. Perpieye zeta. Down zero 48 left zero 5. The remainder not applicable. Sirius Rigel 129155 zero one zero. No ullage. We'll pass up the remainder up later.

CAPCOM Roger, Jim. One question - we talked about a T40 gimbal check. Would you like to do that during this maneuver to LOI attitude or would you rather hold that off until a little closer to LOI. Over.

SC Let me check on that. We weren't using them.

CAPCOM Roger, standing by.

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 661420, CST 1:05a 195/2

SC Houston, Apollo 8.
CAPCOM Apollo 8, Houston, GO.
SC Roger. We could make this gimbal check
as a maneuver to the LOI attitude.
CAPCOM Roger.
SC I understand that you'll load us up with
the LOI one pad and we'll run through these for you as far
as the gimbal check.
CAPCOM Roger. That's what we heard you were
going to do on it. Are you going to run both the manual
gimbals as well as the automatic, correct?
SC Roger.
PAO This is Apollo Control. That was the
preliminary maneuver pad passed to Apollo 8 for the LOI one
ignition or burn. Some of these numbers represent some
slight changes and we've leaned from the long listing certain
ones that could be considered of interest. We're looking
at time of ignition at 69 hours, 8 minutes, 18 seconds.
The burn a retrograde burn should place us in an orbit around
the moon with an apolune of 169 nautical miles, a perilune
of 60 nautical miles. The DELTA-V for the burn that we're
looking at would be 2994 feet per second, burn time of
4 minutes, 2 seconds. So at 66 hours, 21 minutes, 35 sec-
onds into the flight, this is Apollo Control, Houston.

END OF TAPE

to 2131

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 663952, CST 1:30a 196/1

PAO This is Apollo Control Houston. At 66 hours 39 minutes 52 seconds into the flight of Apollo 8. Apollo 8 drawing closer to the moon at this time we read a distance away of 6848.8 nautical miles. Our present velocity 4643.5 feet per second. We've had only a brief conversation with the crew of Apollo 8 since our last transmission and we will pass that along now.

CAP COM Apollo 8. Houston. Standing by to monitor P52. Over.

SC Roger. Houston. Apollo 8. P52 complete.

CAP COM Apollo 8. Houston. Roger. Copy.

PAO Apollo Control Houston. Although we expect an apilune of 169.3 nautical miles, and a perilune of 60 nautical miles to result from the lunar orbit insertion number one burn, we would anticipate ignition for the 2994 feet per second at an altitude of about 70 nautical miles. Since on our trip out the moon is below our trajectory plane or path and as Apollo 8 approaches the moon, we will see a velocity build up to around 8400 feet per second at the time of LOI ignition. Our approach - on approach the spacecraft sort of dives toward and behind the moon. So at 66 hours 41 minutes 50 seconds, this is Apollo Control Houston.

END OF TAPE

lunar orbital ~~Translunar~~ insertion 211/1 211/2 (copy)

PAO This is Apollo Control Houston at 66 hours 57 minutes 14 seconds now into the flight of Apollo 8. Apollo 8 now 6077.3 nautical miles away from the moon. Its current velocity 4729.7 feet per second. We have had considerable conversation over the past few moments with the crew. And we will pass that along now.

SC Houston. How do you read Apollo 8?

CAP Apollo 8. This is Houston. Loud and clear.

SC Okay, Jerry. At 67 we are going over to the LOI one attitude, do a sextant star check and then we will have to go back to PTC. I want to know if you want us to go back to the same attitude we are at now?

CAP COM Apollo 8. Houston. That is affirmative. Break. We are getting ready to ask you to do an eraseable dump Verb 47. We are ginning up to get ready for it now and we will call you as soon as we are ready to copy.

SC Understand. Verb 47 when you call.

CAP COM Negative Verb 74.

SC Okay. Verb 74.

CAP COM Apollo 8. This is Houston. We are setting up for the dump now. It will take about 3 minutes and 20 seconds once we start the dump. Over.

SC Understand.

CAP COM Apollo 8. Houston. Go.

SC Roger. Can you point out the position of this Persizeta (?) to us a little better. We don't have it marked on our charts. We have got the bare facts and we know how to go, but which one is Persizeta (?)

CAP COM Roger. Frank. Persizeta (?) is just about exactly between Aldebaran and Mirfak.

CAP COM Apollo 8. This is Houston. We are ready for your C&C eraseable dump. PVerb 74 enter. Over.

SC Roger. Verb 74 enter. Did you get it? Houston. Apollo 8. Are you getting the dump?

CAP COM Apollo 8. This is Houston. Indications are that we are getting it. We are checking. You will have to leave the computer on for 3 minutes and 20 seconds. Over.

SC Roger. We are.

CAP COM Apollo 8. Houston. We are getting your dump low bit rate through Honeysuckle.

SC Roger.

CAP COM Apollo 8. Houston. Persizeta (?) is third magnitude star same as Enif. Over.

SC Same magnitude as Enif.

CAP COM Affirmative.
 SC Okay. When are you going to send us
 the TEI one and the rest of that block data?
 CAP COM Apollo 8. Houston. PC plus 2 does not
 need an update. So I have your TEI one and two in about
 10 minutes. Over.
 SC Roger.
 CAP COM Apollo 8. Houston.
 SC Go ahead Houston. Apollo 8.
 CAP COM Apollo 8. Houston. The dump is complete.
 You can have your computer back. The reason for the dump was
 to investigate further the P52 anomaly you had about 4 hours
 ago. We will try to have some words for you in about 20 or
 30 minutes. Over.
 SC You mean when it wouldn't come up with
 the proper star?
 CAP COM Affirmative.
 SC Okay. We are going to go ahead and start
 our maneuver to LOI one attitude.
 CAP COM Roger. Standing by to monitor.
 SC Houston. Apollo 8.
 CAP COM Houston. Go ahead.
 SC I ran into a flight - I noticed that the
 auto optics look drive to the star pick a pair selected.
 Example, we did pick Alphard at one time, went drive there -
 drove to a spot that had no star and I went back and re-
 selected the program and came back and it worked okay.
 CAP COM Roger. Jim. Copy. Jim, is this anomaly
 you are talking about, was that 4 hours ago when we did the
 REFSMMAT alignment?
 SC This happened, I think, yesterday. When
 we - we were doing a regular REFSMMAT alignment, Alpheratz
 was the first star selected and it didn't drive to Alpheratz.
 And I ran and reselected the program again and it worked
 okay.
 CAP COM Okay, Jim. Thank you.
 SC Jerry. This is Apollo 8.
 CAP COM Go ahead.
 SC Our PAD here is - Roger. I understand
 the gimbal angles for LOI one are roll zero pitch 200, and
 yaw 5. Is that correct?
 CAP COM Affirmative Frank. That is correct.
 CAP COM Apollo 8. Houston. With a map update.
 Over.
 SC Okay, stand by a minute.
 CAP COM Roger.

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 665714, CST 1:48a 197/3

SC Go ahead.
CAP COM Apollo 8. This is Houston. Map update
REV 1 splash 2. 685804 690505 693141 701448. Copy?
SC Copy.
CAP COM 705636 710059 711042 713940 722317.
Copy?
SC Copy.
CAP COM Roger. Remark Charlie Poppa 1711457
Charlie Poppa 2 712832 Charlie Poppa 3 714726 Bravo 1 720942
Over.
SC Roger. Stand by. I'll get the antenna.
Map update as follows Houston. 685804 690505 693141 701448
705636 710059 711042 713940 722317 Charlie Poppa 1 711457
Charlie Poppa 2 712832 Charlie Poppa 3 714726 Bravo 1 720942
CAP COM Apollo 8. This is Houston. Read back
is correct. Apollo 8. Houston. Try to lock up an omni
for us. Over.
SC Roger. How do you read now Houston?
CAP COM Apollo 8. Houston. Reading you loud
and clear. No TM.
SC Understand. No TM.
PAO Apollo Control Houston. As you heard
Apollo 8 has begun its maneuver towards the LOI one burn
attitude. Apollo 8 has started this maneuver. Map by the
way does not translate into

END OF TAPE

Apollo 8 Mission Commentary, 12/24/68, 670714, 1:58am, 198/1

PAO has started this maneuver. Map by the way does not translate into message acceptance Paul said it did in earlier manned flights. These numbers that were passed along are times in lunar orbit for acquisition in loss of signal for the manned space flight network. Lunar sunrise and sunset times in crossing of the moons sub-prime radian determined by the lunar sunset terminator longitude. It's almost, in fact it is 2 hours passed midnight now. It's Christmas Eve and as we proceed on the last lap of our flight path toward a position where the moon will be, Apollo 8 is actually coming to a final phase of rendezvous with the moon. The moon too is traveling from the time of lift off the moon will have traveled on the order of 130 nautical miles to make good its meeting for the lunar orbit insertion burn. So at 67 hours 8 minutes 14 seconds into the flight this is Apollo control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 672700, CST 218a 199/1

PAO This is Apollo Control Houston at 67 hours 27 minutes now into the flight of Apollo 8. Apollo 8 now 4715 nautical miles away from the Moon. Current velocity reading 4933 feet-per-second, forty-nine hundred and thirty-three feet-per-second. As we had indicated earlier, the Moon will have traveled about 130 nautical miles from the time of liftoff to time of LOI-one. Apollo 8 has now achieved it's proper burn attitude, we've had considerable conversation with the Apollo 8 crew which we'll pass along now.

CAP COM Apollo 8, Houston.

SC Go ahead, Houston, Apollo 8.

CAP COM Roger, Frank. How far are you from your gimbal drive check? Over.

SC We're just maneuvering to the attitude now.

CAP COM Roger, Frank. Can you lock up the high gain at that attitude? We have a telemetry problem. Over.

SC We'll try to. I don't know if we can or not. Have to wait until we get there.

CAP COM Roger, standing by.

SC Houston, this is Apollo 8. We cannot get the high gain at the burn attitude.

CAP COM Roger, Frank. Thanks anyway. (pause) Apollo 8, this is Houston. We have a handover from Honey-suckle to Guam in about two minutes.

SC Thank you.

CAP COM Apollo 8, Houston. Apollo 8, Houston. Apollo 8, Houston. Over. Apollo 8, Houston. Over.

Apollo 8, Houston.

SC Houston, Apollo 8.

CAP COM Apollo 8, Houston. Loud and clear, how me?

SC Houston, Apollo 8.

CAP COM Apollo 8, this is Houston loud and clear, how me? Over. Apollo 8, Houston. Over. Apollo 8, Houston. Over.

SC Go ahead, Houston, Apollo 8 here.

CAP COM Apollo 8, this is Houston. I have TEI-one and TEI-two pad, we still have no telemetry; expect to get it soon. Over.

SC Roger. You think it's a ground problem?

CAP COM Roger, it's a ground problem, we just got it back.

SC Houston, Apollo 8, go ahead with your data.

CAP COM Apollo 8, this is Houston with an LOI-one pad. Over.

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 672700, CST 218a 199/2

SC Roger, understand. LOI-one.
CAP COM That is affirmative, LOI-one FTF D&M,
62844 1 correction minus 161 plus 129 069 08 1952 minus 29840
plus 02390 plus 01053. Copy. (pause) Apollo 8, Houston.
Over.

SC Roger we broke lock, did not get the
Delta VX.

CAP COM Apollo 8, Houston. Roger. Beginning
with Delta VX, minus 29840 plus 02390 plus 01053 000 200
005 01693 plus 00600 29954 402 29788. Copy.

SC Roger.
CAP COM Roger. 01 0688 259 persizeta (?) down
048 left 05, the remainder not applicable, Sirius Rigel
129 155 010, negative all H. Horizon window, ignition
minus two minutes, 40 degrees unlit, ignition 27 degrees
unlit. Over.

SC Roger. LOI-one SPS G&N 62844 minus
161 plus 129 069 08 1952 minus 29840 plus 02390 plus 01053
000 200 005 01693 plus 00600 29954 (cut out)

CAP COM Apollo 8, Houston. Readback is correct.
Ready to copy TEI-one. Over.

SC Roger.
CAP COM Apollo 8, this is Houston. Are you
waiting for us before you start your gimbal check? Over.

SC We're waiting to start the gimbals
check right here.

CAP COM Roger. You wanna copy while your doing
it or stand by on TEI-one?

SC Stand by for a minute.

CAP COM Roger. Standing by. Apollo 8, this is
Houston, shifting command back to Honeysuckle. Over.

SC Roger.

PAO Apollo Control Houston. You heard an
update to our LOI-one maneuver pad being passed along. This
changed only one number and only by one second. The GET,
ground elapsed time, ignition has changed to 69 hours
19 minutes 05 seconds, correction that would be a change of
one minute. So at 67 hours 36 minutes 05 seconds, this is
Apollo Control Houston.

END OF TAPE

Apollo 8 Mission Commentary, 673821, 12/24/68, 2:30am, 200/1

PAO This is Apollo 8 control Houston. 67 hours 38 minutes. We've twisted our tongue on that last announcement the ground elapse time of ignition should read 69 hours 8 minutes 19 seconds. We repeat it should read 69 hours 8 minutes 19 seconds, a change of 1 second. So at 67 hours 38 minutes 40 seconds this is Apollo control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 674615, CST 2:37a 201/1

CAPCOM Apollo 8, Houston, how is that gimbal drive check going?

SC It went fine.

CAPCOM Roger, Frank. We're ready with the TEI 1 and 2 maneuver pads. We've also got two state vectors in a target load to upblank and load if you'll configure for it. Over.

SC Roger, we're trying to get...we're maneuvering to PTT.

CAPCOM Roger.

SC Go ahead with you TEI pads.

CAPCOM Apollo 8, this is Houston. TEI 1 SPS G & N 462, correction 46728 minus zero 53 plus 121 zero 71 25 zero 473 plus 37746 minus zero 32 niner niner...1221 zero 45. Sirius Rigel, 12 niner 155 zero 1 zero, ullage 2 jet 2 zero seconds jet BRAVO DELTA, horizon window X-axis on horizon at ignition minus 3 minutes. Assume LOI 1. Over.

SC Houston, Apollo 8. TE 1 as follows: SPS G & N 46728 minus zero 53 plus 13 copy.

CAPCOM Roger, copy.

SC Plus zero zero 1763790033637005421279 309. Not applicable three times. Plus 1350 minus 16500 1305036389 1221045. Sirius Rigel. 129155010 ullage, 2 jets, 20 seconds, quad N & D, horizon window X-axis on horizon at ignition minus 3. Assume LOI 1.

CAPCOM Apollo 8, Houston, Roger. Correct.

SC Standing by for TEI 2. Do you have it?

CAPCOM Apollo 8, Houston. Will be ready with the TEI 2 in about 1 minute.

SC Roger.

CAPCOM Apollo 8, Houston, with a TEI 2 maneuver pad.

SC Roger, ready to copy.

CAPCOM Roger. TEI 2 FPF G & N 46728 minus 053 plus 121, copy.

SC Roger, copy.

CAPCOM Roger, 073213024 plus 28466 minus 00350 plus 02406180022002, not applicable. Plus 00188, copy.

SC Roger, copy.

CAPCOM Roger. 28570250284014206412 niner 6, not applicable three times. Plus 0 niner 20 minus 1650012 niner 53361751463216, copy.

SC All right, copy...

CAPCOM Apollo 8, Houston, request you switch your OMNI. It's getting pretty terrible now.

SC Apollo 8, I copied. I question the latitude and the range to go. It appears that you gave me 12 few digits in both cases.

CAPCOM Roger. I repeat latitude plus 0 niner

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 674615, CST 2:37A 201/2

20 minus 1650012 niner 53361751463216, copy.

SC I copied.

CAPCOM Roger. You GDC aline is no change,
ullage no change, horizon on the minus 2 degree line at
ignition minus 3 minutes. Assume to LOI 1, over.

SC Roger. TEI 2 maneuver pad SPS G & N
46728 minus 053 plus 121 073

END OF TAPE

Apollo 8 Mission Commentary, 12/24/68, 2:51 am, 202/1

SC Plus one two one, zero seven three, two one, three zero two four, plus two eight four six six, minus zero zero three five zero. I did not get the five zero two four zero six for a double z z. One eight zero, zero two two, zero zero two not applicable. Plus zero zero one eight eight, two eight five seven zero, two five zero, two eight zero zero one, four two zero six four one, two nine six, not applicable three times. Plus zero nine two zero, minus one six five zero zero, one two nine three, three six one seven five, one four six three two one six. No change in these. GDC aline stars no change knowledge a rise on the minus GDC line at T minus 3 assumes LOI-one.

CAP COM Apollo 8 this is Houston. Roger correct. I repeat delta zz plus zero two four zero six over.

SC Roger. Plus 02406.

CAPCOM Roger.

PAO This is Apollo Control Houston. We're going to cut short here for a moment because very shortly we will have our GO-NO/GO decision. Incidentally, this block data that's being passed along is continuancy information only making ground information available to the crew for a transearth injection burn at the end of the first or second lunar orbits plus PC plus 2 which translates into pericyynthion plus 2 hours. The time of closest approach to the moon plus 2 hours. This information is entered into the onboard equipment, but it is used only if an alternate mission becomes necessary. So, at this time we are going to stand by and continue to monitor the loops here in Mission Control for our GO-NO/GO decision

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 680040, CST 2:52a 203/1

PAO This is Apollo Control Houston. 68 hours 32 seconds. We have conversation going back and forth with the crew now. The Apollo 8 spacecraft at this time 3125.7 nautical miles away from the moon. And our velocity 5319.6 feet per second and we are standing by at this point for our decision which appears very likely to be a go for lunar orbit. Standing by. This is Apollo Control Houston, continuing to stand by for that decision point. At 68 hours 1 minutes 49 seconds.

CAP COM Apollo 8. Houston. Over. Apollo 8. Houston.

SC Roger. This is Apollo 8.

CAP COM Roger. That pericyynthion you read out is for ignition. We read that as 75 miles. Your true pericynthion is 64 miles at 691035. Over.

SC Roger.

CAP COM Apollo 8. This is Houston with an addition to your TEI one maneuver PAD. Over.

SC Stand by a minute. Go ahead.

CAP COM Roger. Under Remarks add the following require minus MA procedure. Over.

SC Requires MA procedure.

CAP COM Affirmative 8. Apollo 8. This is Houston at 6804 you are go for LOI.

SC Okay. Apollo 8 is go.

CAP COM Apollo 8. Houston. You are riding the best one we can find around.

SC Say again.

CAP COM You are riding the best bird we can find. Over.

PAO This is Apollo Control Houston at 68 hours 4 minutes 40 seconds. As you just heard, we passed along the go for the lunar orbit insertion burn, with the service propulsion system engine. Flight Control team here in Mission Control has examined the data and it is good. So we have a combined crew/ground decision. We are go. Repeat - go for lunar orbit insertion one. At 68 hours 5 minutes 10 seconds into the flight of Apollo 8, this is Apollo Control Houston.

END OF TAPE

PAO This is Apollo Control Houston at 68 hours 12 minutes 12 seconds into the flight. Apollo 8 draws closer to the moon. Our current distance away 2555.9 nautical miles. Our velocity building up now reading 5527.5 feet per second. We have stored some tape so we could pass that go/no-go decision to you live, so we will turn and play you back that tape now.

CAP COM Houston. If you can go 00 ACCEPT, we will start the NAV load.

SC Roger. Go ahead.

CAP COM Apollo 8. Houston. That CM vector is in working on the LM now. Over.

SC Roger.

CAP COM Apollo 8. Houston. We would like a cryo fan cycle when you can. Over.

SC Roger. We are starting that now.

CAP COM Roger. Apollo 8. Houston. The LM vector is loaded - target load going in now.

SC Roger. Go ahead Houston.

CAP COM Apollo 8. Houston. The update is complete. You can have the computer. TLM to block. Be advised the eraseable dump checks out okay.

SC Roger. Thank you. We have the computer. We are in block.

CAP COM Roger. Apollo 8. This is Houston. We would like to make at this time a down voyage backup comm check. Set the S-band OX tape to down voyage backup. PLN input PCM low. Over.

SC Roger. Houston. We would like to have a check of our DSE on low bit rate for voice.

CAP COM Roger. Understand. You want the DSE check on low bit rate for voice.

SC That's affirmative and we will give you - it about 10 minutes now, for about 5 minutes and then you can check it out.

CAP COM Roger.

SC Houston. Apollo 8.

CAP COM Apollo 8. Houston. Go.

SC As a matter of interest, we have yet to see the moon.

CAP COM Roger. Apollo 8. Houston. What else are you seeing?

SC Nothing. It's like being on the inside of a submarine.

CAP COM Roger.

SC Houston. We just ran our program 21.

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 681212, CST 3:03a 204/2

SC We show a pericyynthion of plus 74.9
miles on the state vector you just uploaded.
CAP COM Roger. Plus 74.9.
SC Roger.
CAP COM Apollo 8. This is Houston. Reading
your downvoice back up loud and clear. I request keep those
switches where they are for the remainder of the pass. Over.
SC Roger. And I am rewinding the tape
recorder for a DSE voice dump check.
CAP COM Roger 8.
SC It's rewound. Are you ready to dump?
We would like to go to S-band OX tape briefly so you can
dump the tape while we are in high gain. We have got about
30 seconds worth.
CAP COM Apollo 8. Houston. We will do that
from the ground. Over.
SC Roger. Switch configuration is downvoice
backup and stop. You got it.
CAP COM Roger. We will dump it.
SC You won't need to dump more than a minute's
worth.
CAP COM Roger.
SC The cryo's have been stirred here.
CAP COM Roger, Bill. Apollo 8. Houston. We
just saw an MC&W light.
SC We just tested the caution and warning.
CAP COM Roger.
SC That's keeping alert.
CAP COM Roger.
PAO This is Apollo Control Houston at
68 hours 16 minutes 42 seconds. We are continuing to
monitor.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 682122, CST 3:12 205/1

PAO This is Apollo Control, Houston at 68 hours, 21 minutes and 22 seconds now into the flight of Apollo 8. Our spacecraft at this time 2100 nautical miles away from the moon, velocity continuing to rise our current reading of 5743.8 feet per second. We had a brief conversation with the Apollo 8 crew moments or minutes back and we're going to pass that conversation on now.

CAPCOM Apollo 8, Houston, we're 42 minutes from LOS and we caught another caution and warning light.

SC It was a high gleam antenna going out of limits.

CAPCOM Roger. Apollo 8, Houston, voice quality on the DSC dumps is very good. The DSC is yours, over.

SC Mighty fine.

PAO This is Apollo Control, Houston. You heard our indication from our capsule communicator to time of loss of signal over the back side of the moon. During this pass over the back side, Apollo 8 will perform its lunar orbit insertion burn number 1 with the service propulsion system engine. Following this burn, the spacecraft weight should be some 16000 pounds lighter with the expenditure of propellants. A slight plane's change of about 2 degrees is combined into this engine firing. The intent of the plane change is to make the Apollo 8 pass over again and heading over the primary Apollo zone. And the desired landing site. To hearken back to Gemini it's an NCC combination correction. At 68 hours, 23 minutes, 20 seconds into the flight, this is Apollo Control, Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 682800, CST 3:19a 206/1

PAO This is Apollo Control Houston at 68 hours 28 minutes into the flight now of Apollo 8. We are drawing closer to the moon with the Apollo 8 spacecraft. Current reading 1773.1 nautical miles away. Velocity going up the steep curve now. Current reading 5945 feet per second. We had a very brief communications check with the Apollo 8 spacecraft. They acknowledged that communications looked fine. We're some 30 minutes now away from our time of loss of signal. And the time that the Apollo 8 spacecraft goes over the backside of the moon, out of sight from the ground. The LOI one burn by the way, is to be performed retrograde to take energy out so that Apollo 8 can dip into a lunar orbit rather than continue in its free return trajectory. For the burn, the crew will be in a heads down position, giving them a visual reference to the lunar surface. The vehicle should be pitched slightly nose up, perhaps on the order of 8 degrees from the local horizontal. At 68 hours 29 minutes 25 seconds into the flight continuing to monitor this is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/24/68, GET 683308, CST 3:24a 207/i

PAO This is Apollo Control Houston at 68 hours 33 minutes 8 seconds now into the flight of Apollo 8. Apollo 8 now 1517 nautical miles away from the moon. Current velocity reading 6120.2 feet per second and accelerating. The Apollo 8 is currently going through a series of systems checks. We have had some conversation. Jerry Carr, our Capsule Communicator with Bill Anders aboard the spacecraft and we will pick that up for you now.

CAP COM Apollo 8. Houston. Comm check.

SC Houston. Apollo 8. Over.

CAP COM Apollo 8. Houston. Go.

SC Roger we are ready to activate the primary water boiler.

CAP COM Roger. Copy.

SC We got a go?

CAP COM Roger. Go.

SC Okay, steam pressure going to AUTO. H2 flow going to AUTO.

CAP COM Apollo 8. Houston. We are on low bit rate. We won't see your steam pressure, your rad out is 33 over.

SC Roger. We're below the boiling limit and steam pressure is steady at 21 5.

CAP COM Roger. Apollo 8. This is Houston. We have got our lunar map up and ready to go.

SC Roger.

PAO This is Apollo Control Houston. You heard that last report. Our lunar map - lunar display is up here in Mission Control Center and we are ready to go at 68 hours 34 minutes 48 seconds into the flight of Apollo 8. This is Apollo Control Houston.

END OF TAPE